

PATENT

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[0080] The seat assembly 476 generally includes a plurality of gripper fingers 474 disposed in a polar array about a gripper plate 472. The gripper plate 472 is coupled to the column 470 so that the gripper plate 472 moves with the drive system 468. In one embodiment, three gripper fingers 474 are provided. The gripper fingers 474 generally include a base member 466, an extension 464 and a contact finger 462. The contact fingers 462 are disposed at an angle to the extension 464. The extension 464 is coupled to the base member 466. The base member 466 is rotatably coupled to the gripper plate 472. The base member 466 generally includes an aperture that aligns with a hole in the gripper plate 472. A clevis pin or other shaft member is disposed through the hole and aperture to allow rotation of the gripper finger 474 in relation to the gripper plate 472.

[0081] An actuator 460 is coupled between the extension 464 and the gripper plate 472. The actuator 460 moves the gripper finger 474 between an open and closed position. A spring 458 may be optionally disposed on the clevis pin to bias the gripper finger 474 towards one position. When the contact fingers 462 are moved inward, a notch 452 disposed at the ends of each contact finger 462 defines a seat 450 that is adapted to receive the substrate 422 from a transfer robot (not shown). In the inward position, the extensions 464 are disposed at a distance from each other that allows the substrate 422 and robot to pass therebetween (See Figure 7A).

[0082] Further, while not shown, a computer based controller may be connected to the apparatus 420 for instructing the system to perform one or more processing steps on the system, such as polishing a substrate or transferring a substrate in the apparatus 420.

[0083] Figure 5 depicts one embodiment of the head assembly 478. The head assembly 478 generally includes a housing 502, a stem 504, a support plate 506 and a plurality of substrate clamps 520 (one of the clamps 520 is shown). Generally, the housing 502 includes a hollow shaft 528 coupled to the actuator 454 at one end and terminating in a flange 508 at the opposite end. The flange 508 has a downwardly extending lip 510 that defines a central cavity 512.

[0084] The support plate 506 is disposed in the central cavity 512. The support plate 506 has a first side 514 and a second side 516. The substrate 422 is generally

HW  
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